

These authors maintain that if regulators were working in the public interest, they would adopt the "efficient" pricing standards proposed by Kahn. According to them, raising the price of exchange service would eliminate the need to recover a portion of the loop's through toll rates. Kasserman and Mayo believe that it is political pressures which causes the Commissioners to ignore their economic arguments and to instead opt to sustain inefficient prices. The Commissioners, these authors assert, fear the political backlash that would occur if the price of local service was increased.³⁶

Kasserman and Mayo are optimistic that competitive market forces will be stronger than the nefarious influence of politics. That "[t]he increasing intensity of competitive market forces in this industry will eventually necessitate the recommended pricing structure regardless of regulatory action or inaction because competition inevitably drives prices to marginal costs."³⁷ Kahn and Shew offer a similar sentiment; that as rivalry increases, all else being equal, the greater the likelihood that a firm will charge an access fee to recover customer access costs.³⁸

Kasserman and Mayo conclude that the failure to adopt higher access fees is due to political influence. I argue below that their alternative hypothesis, that utility economists do not offer an explanation that is consistent with how markets work, is a better way to explain their regulatory defeats. The regulatory record suggests that some commissions, Florida being a notable example, start with a view of how a fully and effectively competitive market works, then they devise policies that replicate those conditions.

Ironically, not only have Kahn et. al suffered numerous setbacks before regulatory commissions, but also at least one of their own clients have rejected their advice when faced with potential rivalry. Alfred Kahn provides consulting services to Southern New England Telephone, the

³⁶Kasserman and Mayo, "Telecommunications Cross-Subsidies," pp. 142-45.

³⁷Kasserman and Mayo, "Telecommunications Cross-Subsidies," pp. 121. A similar lack of understanding of how pricing evolved in the competitive, unregulated telecommunications market has been demonstrated in a working paper by Bruce Egan and Steven Widlman, "Funding the Public Telecommunications Infrastructure," (January 1994), p. 4: "This system, rooted more in political compromise than economic logic, was sustainable when there was a single monopoly network. However, competition is the natural enemy of cross-subsidy and the emergence and continuing growth of competitive suppliers makes it doubtful that the current mechanisms for managing these transfers can be maintained much longer."

³⁸Kahn and Shew, "Pricing," p. 204.

largest local exchange company in Connecticut. In February 1995, Kahn told the State regulatory commission that the current rate structure was an "economic sin" because of the low residential rates and the high price for toll service. Dr. Kahn recommended that the rates be rebalanced throughout the State.³⁹

In October of the same year, during a rate case, the Commission Staff asked the Company to propose how it would restructure its service rates. The Company pointed out that for "most local exchange companies, restructuring means moving prices for local residential service up, while most other prices move downward." However, it declined to propose any rate increase for residential service. It felt that such a move, "either as a matter of public policy or customer impact," was inappropriate at the time "that intrastate one plus dialing and local competition are being introduced."⁴⁰ Like many regulatory commissions, Southern New England Telephone dismissed the advice of its own consultant, Alfred Kahn, because the proposed restructuring was incompatible with competitive market conduct, a widely recognized goal of regulation.

Competitive market behavior

In a proceeding before the Florida Public Service Commission, interexchange carriers advocated that they not be made to pay for use of the local loop, since the facility is non-traffic sensitive. The Commission rejected this proposition, noting that it would be "contrary to common business practices which is to charge customers for use of fixed cost facilities in the price for goods and services" [citing Florida PSC Order No. 12265]. It is appropriate that each service provide some contribution toward the fixed costs common to those services."⁴¹ The Commission's position is just

³⁹Connecticut Department of Public Utility Control, Investigation into the Southern New England Telephone's Cost of Providing Service, Docket NO. 94-10-01, February 1, 1995, Transcript, p. 157.

⁴⁰Response of Southern New England Telephone, TE052 Supplemental Response, October 13, 1995, Application of the Southern New England Telephone Company for Financial Review and Proposed Framework for Alternative Regulation, Docket 95-03-01. One plus dialing provides customers with the ability to subscribe to their interexchange carrier for intrastate toll services, and this thereby makes the toll market more competitive.

⁴¹Florida Public Service Commission, RE: Investigation into Nontraffic Sensitive Cost Recovery, Order No. 18598, December 24, 1987, 89 PUR4th 258, 265-66.

the type of regulatory decision with which Mayo, Kasserman, and Kahn disagree. They feel that it fails to adapt to the imperatives of competitive market forces. In the following sections, I provide examples to illustrate that the Commission was correct. In competitive markets, customer access line costs are not recovered entirely through the price of access.⁴² Rather, the competitive standard requires that the cost of access should be recovered from all the products that benefit from the facility. I provide these examples for three reasons. First, the 1996 Telecommunications Act makes it clear that it is the nation's policy to promote competitive outcomes. Recovery of customer access costs exclusively through customer access charges is contrary to the law [Section 254(K)]. Second, the emulation of competitive markets is a widely recognized objective of regulation. I believe these examples illustrate that the elimination of the common carrier line charge would violate this standard. Finally, economists who work for the utility companies, such as Kasserman and Mayo, have claimed

⁴²Drs. Taylor and Gordon affidavit in the universal service docket reflects a different pricing philosophy that has been promoted in other cases. In a docket before the federal communications commission, Dr. Taylor argued on behalf of Bell Atlantic that it would be "economically incorrect" to recover the cost of its broadband platform from one service, such as video dial tone. Dr. Taylor declared that "the common cost of the network platform should be recovered from all services that use the platform." Affidavit of William Taylor, Exhibit A, pp. 4-5, *In the Matter of The Bell Atlantic Telephone Companies Tariff FCC No. 10 Video Dialtone Service*, Transmittal No. 741, March 6, 1995. In the universal service docket, he takes the opposite position. Dr. Taylor argues that the appropriate economic principle is to recover the cost of the loop, a platform that is used by all switched services from one product, exchange service. Kenneth Gordon and William E. Taylor, "Comments on Universal Service," p. 8 April 12, 1996, attachment to "Comments," BellSouth Corporation, "In the Matter of Federal-State Joint Board on Universal Service," CC Docket No. 96-45, April 12, 1996.

The apparently conflicting positions of Dr. Taylor are easy to understand. In the video dialtone case, Bell Atlantic wanted to make sure that its competitive video services were not assigned too many of the common and joints of the broadband loop platform that provides both video and voice services. The cable television industry had proposed to the FCC that since video was driving the upgrade of the loop plant, the cost driving service, video, should be assigned all of the cost of the upgrade. When only a narrowband network is being subject to cost allocations, as is the case with the universal service proceedings, the LECs want to see as much of the costs allocated to monopoly services, something that can only be done because the product is not subject to competition. If the access market was competitive, it would not be possible to recover all the joint cost of the loop from one product, exchange service.

that value-of-service pricing is not sustainable in competitive markets.⁴³ Both the theoretical and empirical literature provide many counter-examples which illustrate the fallacy of their assertion. Casual empiricism suggests that value-of-service pricing is more the rule than the exception.

In the next section, I will look at how competitive markets work. First, I will present a brief overview of how several modern markets operate in a competitive environment. I will then provide a detailed look at how the telephone industry operated historically under conditions of rivalry.

Segmented Pricing

Noticeably absent from the writings of Kahn, and other like-minded economists, is any reference to the theoretical literature which suggests that, under conditions of rivalry, the cost of access is recovered entirely through a customer access charge. Indeed, the theoretical literature shows just the opposite. Scotchmer has shown how, as the number of suppliers in a market increase (i.e.: the degree of competition increases), customer access fees converge to zero.⁴⁴ What Kahn, et. al., seem to have overlooked in their analysis is that “....people do not make purchases by evaluating the products alone but by evaluating the entire purchase opportunity.”⁴⁵ This makes a firm’s pricing

⁴³Kasserman and Mayo, “Telecommunications Cross-Subsides,” pp. 128-29.

⁴⁴Suzanne Scotchmer, “Two-Tier Pricing of Shared Facilities in a Free-Entry Equilibrium,” Rand Journal of Economics, 16 (1985), pp. 456-472.

The utility economists’ advocacy of recovery of customer access costs exclusively through fixed customer line charges fits into Stigler’s description of the regulatory process where firms turn to the state to obtain (cartel) goals that are difficult to achieve without government intervention. George J. Stigler, “The Theory of Economic Regulation,” 2 Bell Journal of Economics and Management Science, 2 (1971), pp. 3-21.

⁴⁵Nagle, Thomas T., The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making, Prentice-Hall, Inc., 1987, p. 168. Southern New England recently expressed a similar view to the Connecticut Department of Public Utilities: “competitors will look at the total basket of services a customer buys, not any single service, in making a decision to market to that customer. Put differently, it is the profitability of individual customers, not individual services, that is attractive to competition.” Response of Southern New England Telephone, TE052 Supplemental Response, October 13, 1995, Application of the Southern New England Telephone

decisions as much a function of strategic positioning and marketing as they are a function of cost recovery. "Moreover, the cost of servicing different buyer segments, and the intensity of the competition to serve them, also varies greatly for the same product. Consequently, effective pricing often requires a strategy of segmented pricing."⁴⁶ This type of strategy takes many forms, some of which are: segmentation by peak-load pricing, such as is seen in the electric utility and telecommunications industries and; segmentation by product design, which can be found in the transportation, software, and retail industries. The variety of strategic pricing options that are used by firms under conditions of competition, of which the above is just a small sample, imply the existence of a much more dynamic and fluid pricing environment than the one envisioned by the utility economists.

In the following paragraphs, I provide brief sketches of firm behavior as empirical support for the proposition that the cost of access is not recovered exclusively through an end-user charge in competitive markets.

Transportation and value-of-service pricing

Telecommunications is hardly the first industry in which economists have taken the position that value-of-service pricing is incompatible with competition. For a number of years, economists ascribed value-of-service pricing in the transport industry to regulation as well. They argued that if the industry were deregulated, competitive forces would lead to a cessation of value-of-service pricing. In the past decade, the deregulation of the railroad and truck carriers has provided a laboratory for testing the hypothesis that value-of-service pricing would not be retained in a competitive, deregulated market. Truck transport has been characterized as competitive because of "free entry, many buyers and sellers, and considerable flow of information." The empirical work

Company for Financial Review and Proposed Framework for Alternative Regulation, Docket 95-03-01.

⁴⁶Nagle, Strategy and Tactics of Pricing, p. 123.

suggests that value-of-service pricing continues to be practiced in the competitive, deregulated transportation markets, as well as those transportation markets which were never regulated.⁴⁷

The persistence or growth of value-of-service pricing has also been observed in another recently deregulated segment of the transportation industry, airlines. Borenstein and Rose, in their study of airline pricing practices, found that the amount of price discrimination actually increases with the degree of competition.⁴⁸ When challengers are present, suppliers use pricing schemes which are designed to lock-in customers. By offering tourists large discounts, an airline can attract these consumers away from other suppliers, while maintaining large mark-ups for business customers. When there is less rivalry, an airline has a reduced incentive to pursue business. Since there is no other game in town, suppliers are less aggressive about attracting the price-sensitive consumer.

Richard Vietor's Contrived Competition: Regulation and Deregulation in America (Cambridge, Harvard University Press, 1994), summarizes the impact of deregulation in six industries. He points out that to the surprise of many proponents of deregulation, pricing mechanisms became more complex once government controls were reduced. Rather than moving to cost-based pricing, as many economists had predicted, many of the markets exhibited an increased level of price discrimination, because firms used pricing to segment customers and establish customer loyalty.

⁴⁷Wayne Talley, "Joint Cost and Competitive Value-of-Service Pricing," International Journal of Transport Economics 16 (1989):119-30; and Richard Beilock, "Is Regulation Necessary for Value-of-Service Pricing?" Rand Journal of Economics 16 (1985):93-102, quote appears on p. 94.

⁴⁸Severin Borenstein and Nancy Rose, Competition and Price Dispersion in the U.S. Airline Industry," Journal of Political Economy 102 (1994), pp. 653-683. Price discrimination occurs when a firm sells similar goods at rates that are in a different ratio to marginal costs. George Stigler, Theory of Price (Macmillan, 1987).

Credit card companies and annual fees

Many credit card companies, despite the option value of the service, do not charge an annual fee to certain customers, even though set-up costs plus monthly billing surely lead to access costs.⁴⁹ During the 1970s, banks wanted to establish annual fees for credit cards, but they refrained from doing so because of competitive market pressures. Banks that tried to impose these charges experienced a large decline in their number of cardholders. Not until 1980, when the Carter administration imposed new rules on reserve requirements, were the banks able to act successfully in concert and establish membership fees.⁵⁰ Nevertheless, today's customers can obtain credit cards for a zero access fee precisely because entry into the credit card industry is relatively unimpeded. This example is actually closer to home than it first appears: AT&T's entry strategy in the credit card market was to offer a lifetime waiver of the annual fee.⁵¹

American Express was one company that attempted to continue to serve customers exclusively through cards that required an annual fee. Their failure to respond quickly to customers' clear preference for cards without an annual fee caused them to lose substantial market share. In 1996, the New York Times reported that "Two years ago, the company shifted its focus from its pay-as-you-go charge cards, with their lucrative fees, and *belatedly showered the public with what clients really wanted: interest-bearing cards in a dozen flavors, many of them free* [emphasis added]."⁵²

The variety of pricing structures in the credit card industry is consistent with my belief that if the exchange market were competitive, competing carriers would offer customers a menu of pricing

⁴⁹See Ausubel, Lawrence M., "The Failure of Competition in the Credit Card Market," American Economic Review, March 1991, pp. 50-81 for a fascinating study of how consumers seem to consistently choose cards with a low annual fee (analogous to the access charge), even when the package entails a heavier annual borrowing rate than a package with a higher fee.

⁵⁰Lewis Mandell, The Credit Card Industry: A History (Boston: Twayne Publishers, 1990), p. 78.

⁵¹AT&T's marketing strategy has been quite successful. The card was introduced in March of 1990. As of September 1996, AT&T's card was the third-largest credit card in terms of accounts. Business Week, "And a Big Loss at AT&T," September 16, 1996, p. 54.

⁵²September 18, 1996, "The Card: A Work in Progress," p. D1.

plans. While some customers would choose to pay a high membership fee in exchange for a low usage fee, others would prefer the reverse. The evidence for price discriminating behavior and market segmentation is further highlighted by the case of Gillette.

Gillette and the power of product segmentation

A firm which has learned the art of strategic pricing extraordinary well is Gillette. Gillette has chosen to focus on a "shaving systems" approach in order to take full advantage of "the principle of complementary products under which the relative prices of products can be exploited because they must be used together. The razor, a quite substantial product, is sold at low price to get it into the consumer's hands. This facilitates the sales of profitable, replacement blades which fit only the systems for which they have been designed."⁵³

Gillette has carried this principle further by using its market dominance to influence point-of-sale displays so that all of Gillette's shaving and shaving-related products are grouped together to enhance the image of Gillette as a quality purveyor of men's shaving products.

A student of Gillette pointed out that another component of the Company's strategy has been: to continually add features to the basic razors, and hence make more profit per blade as consumers buy up in features. This started with the Trac II twin blade system, and continued with the pivot head first on the Atra, and then later on the Good News disposable. Following this introduction was the addition of a lubricating strip on the blade that would release a lubricant when wet. This feature was first put on the Atra Plus, and later added to the Good News Plus.

What Gillette has been effectively doing is hooking the consumer with a low priced razor and blade, and then having him buy upscale a little each time. With a fixed market size, this is almost the only way to increase profits.⁵⁴

To augment the above strategies, and to ensure that their brands offer value, Gillette also follows what it calls a market basket approach to pricing. "The company keeps a daily track of a collection of lowly items, including a newspaper, a candy bar, a can of coke, all ranging from 10 cents

⁵³Thomsen, Kenneth A. "The Global Strategy of the Gillette Corporation," MIT MS Thesis 1987, p. 44.

⁵⁴Ibid., p. 29.

to a dollar. And then it never raises its prices at a faster rate than the price of this market basket.”⁵⁵ This profit maximizing strategy is driven by providing value to customers, not setting price equal to cost.

Netscape and the power of increasing returns

Another pricing/marketing strategy which has been highly successful is the one embodied in the idea of “increasing returns.” The basic idea of this, in a nutshell, is that once you create a big market share for your product, there will be a strong tendency for that market presence to expand. This is especially true in the case of the software industry, which is highly susceptible to “network externalities.” The idea is that the more widely used a product is, the more value people will place on it. This value increases even more if the company that makes the initial product can persuade third-party vendors to create products which complement it.⁵⁶ In addition, software is a high-fixed cost/low-variable cost product. R&D is the most expensive component of any software package. The actual production of each shipped unit is relatively small. It involves little or no raw material cost, little or no inventory cost, and with distribution over the Internet, distribution costs can be almost zero.⁵⁷ It is this set of ideas and circumstances which are behind the seemingly irrational actions of companies, such as Netscape, that distribute software free of charge through the Internet.

The Netscape Navigator made its debut in December of 1994 and within seven months of its release two-thirds of the nine million browsers used on the World Wide Web were Navigators.⁵⁸ This give-away not only resulted in a massive market dominance for Netscape’s Navigator software, it also prompted thousands of third-party vendors to write add-on products which were designed to work

⁵⁵Morris, Betsy, “The Brand’s the Thing.” Fortune Magazine Website, Copyright 1996, p. 5.

⁵⁶Aley, James, “Give it Away and Get Rich: Plus Other Secrets of the Software Economy,” Fortune Magazine Website, Copyright 1996, p. 4.

⁵⁷Aley, p. 2.

⁵⁸Sprout, Alison L., “The Rise of Netscape,” Fortune Magazine Website, Copyright 1995, p. 2.

with Navigator. Some of these add-on products are available only in the enhanced version of Netscape, which is available for \$39 and which also includes customer support.⁵⁹

By giving away its browser software, Netscape created a high-profile awareness of its product and a broad base of users and vendors. The company capitalized on this awareness, and its base of specialty add-on vendors, to leverage its position as a seller of more highly priced corporate-server and browser software packages, which are specially configured to meet the growing needs of corporate intranet communication.⁶⁰

Another company which has played this give-it-away-and-thrive game is id Software, the creators of Doom and Quake. The company spent two million dollars creating Quake and then distributed an abbreviated, but fully functioning, version of the game free on the Internet. To obtain the game in its entirety, with all its hellish bells and whistles, a user has to buy it in a store or via an 800 number. This strategy has "put its games on millions of hard drives around the world—and made \$16 million in 1995."⁶¹

As a caveat, it should be noted that software development of this kind involves large fixed costs which are not specific to a customer. This cost structure is much different from a telephone network for which there are access costs which are specific to customers. However, the interesting point here is that Mayo and Kasserman argue that fixed costs, such as software development costs, should be recovered from a fixed customer charge. Clearly, as the above examples make explicit, not all software firms follow this strategy and those that don't often do quite well for themselves in this ferociously competitive market. Indeed, the Netscape practice of providing end-user access for free in order to create value for the product has been deemed by Business Week "the business model for the new software industry."⁶²

⁵⁹Ibid., p. 2.

⁶⁰Ibid., p. 3.

⁶¹Aley, p. 1.

⁶²Business Week, December 4, 1994, "The Software Revolution," p. 90.

Internet service providers and access pricing

The provision of Internet access/service is another highly competitive market, one in which if Kasserman and Mayo are correct, all customer access costs would be recovered through access charges. What is actually observed, however, is something a little bit more complicated, as the Table below makes clear.

**Table of Selected Internet Service Providers
Offering Personal PPP or SLIP Accounts
accessible with a Local Analog Call from within the greater Boston Area.**

Total Number of ISPs	Percent of ISPS Requiring a Setup Fee	Range of Setup Fee		
50	40%	\$10 to \$50		
Monthly Fee Charges: Percentage of ISPs				
\$5 to \$10	\$10.50 to \$15	\$15.50 to \$20	\$20.50 to \$30	
8%	12%	44%	36%	
Hours Included in Monthly Fee: Percentage of ISPs				
0-20	25-50	60-100	125-240	unlimited
12%	14%	20%	4%	46%

From the Table provided above, we can see that approximately half of the Internet Service Providers (ISPs) do not charge set-up fees to prospective customers. This lack of a set-up fee is used primarily to lure customers to sign onto a certain network.⁶³ Furthermore, it is evident that a

⁶³Another example of this approach is MCI's decision to offer members of its Friends & Family Program a free electronic mailbox (Wall Street Journal, November 11, 1994, p. B3). Quoted in "Universal Access to E-Mail: Feasibility and Societal Implications," Robert H. Anderson, Tora K. Bikson, Sally Ann Law, and Bridget M. Mitchell, MR-650-MF, 1995 Chapter 4, p. 15 (HTML, PDF). Available from the RAND Website.

significant proportion of ISPs offer unlimited access to network subscribers. Offerings of unlimited access by this great a proportion of access providers in an industry whose cost structure is highly usage-sensitive would seem to indicate that competition is not driving all ISPs to create usage pricing structures.⁶⁴ This is especially surprising given the fact that as the network becomes more congested, the provider will have to lease out more lines/bandwidth, upgrade modem pools, and incur other costs related to the increased usage. Obviously, it would appear that competition in the provision of Internet access is not driving price to cost. Instead, the story which this Table seems to illustrate is that ISPs are segmenting their markets by offering consumers a variety of variably priced bundling options from which to choose. In other words, the ISPs are responding to the pressures of competition by pursuing value-of-service pricing strategies similar to those which the transportation industry and airlines followed upon deregulation.⁶⁵

Pricing of access in the mobile market

The value of rivalry in introducing change in pricing structures has been richly described in a recent Organization for Economic Co-Operation and Development (OECD) paper: "Mobile Communications: Pricing Strategies and Competition." The OECD found that when one firm controls the market, this supplier tends to view the market as static; consequently, it does not actively seek new customers or experiment with new pricing plans and products. While the LECs have traditionally seen access as a burden associated with providing telephone service, mobile

⁶⁴Part of the lack of usage based pricing might be due to technological constraints. The most obvious usage charge, a charge per packet, would consume more computer capacity than is needed to transmit the packets in the first place. "Freeloading as a way of Life; The Strange Economics of Cyberspace," Copyrighted 1995 by the Economist, downloaded from the Economist Website.

⁶⁵This is also mentioned in the RAND report cited above. "Customers will face a variety of optional price structures and will be encouraged to purchase bundles of services with inducements to stay loyal (term commitments, frequent flyer tie-ins, cash back every quarter, etc.)," Chapter 4, p. 21.

suppliers have lowered the price of access because of the drive to obtain market share.⁶⁶ Rather than focusing on the handset as a cost-center, the entrants have heavily discounted the price of access. They know that to be successful in a competitive market, it is essential to have customers become members of their networks. As has recently been pointed out in Business Week, "Cell-phones increasingly are seen by retailers as little more than giveaway commodities, useful for signing customers up for service." The cost of providing free phone sets has hardly been a trivial expense, the "free" hardware typically costs the network operator \$150 per handset. The access provider offers the free telephone because it wants to gain subscribers for the network. Then it can earn profits from commissions on air time.⁶⁷

The recent pricing developments in the mobile market raise the issue: if the wireline telecommunications market were competitive, what type of pricing structures would be observed? The experience of the wireless market provides further support for my proposition that rivalry would promote a proliferation of different pricing structures, including those with reduced customer access fees. If the market story offered by Kahn, Mayo and Kasserman were correct, we would not see mobile companies giving away telephones in order to provide customer access. Instead, we would observe a persistence of the pricing structures that existed during the era when there was less rivalry--customers would have to make a one-time payment for their handsets.⁶⁸

Access pricing in the inter-exchange market

During the late 1970s and the early 1980s, some suppliers entered the long-distance market. These other common carriers, such as Western Union, Sprint, and MCI, originally charged their subscribers a fixed monthly access fee. However, due to competitive pressures, they eliminated it. Sprint was the first to drop the charge, in January of 1984, for those customers whose bill was

⁶⁶OECD, "Mobile Communications: Pricing Strategies and Competition," 15 May 1995, ¶¶80-97.

⁶⁷"Motorola Goes for the Hard Cell," Business Week, September 23, 1996, p. 39.

⁶⁸The cellular operators recover the cost of providing customer access through usage fees and a fixed monthly fee. The fixed monthly fee typically provides a minimal amount of air time. The fixed monthly fee does provide a means for recovering a portion of the cost of the mobile set.

greater than five dollars per month. According to a December 16, 1983 New York Times' article, "the policy change is Sprint's attempt to increase its market share quickly as competition for lucrative long-distance calling increases." Sprint's pricing change illustrates that competition often results in either a negligible or nonexistent fixed fee. Contrary to the predictions of Mayo and Kasserman, this competitive firm did not use a fixed customer fee to collect its customer-specific costs, such as billing, or the fixed costs of the firm's operations.

Telephone pricing trends under competition

In this portion of the chapter, I will use the archival records of an unregulated telecommunications supplier, AT&T, to demonstrate that the claims that value-of-service pricing is antithetical to competitive market behavior is no more true than the claims mentioned earlier about the transportation, airline, or the other industries. Prior to 1907, AT&T provided local exchange and toll service, but it was not regulated. In 1894, when its patent monopoly expired, it faced competitors in many markets. This period of rivalry provides experimental data regarding the claims of economists that value-of-service pricing is not sustainable in competitive markets. I will show that, at the turn of the century, as in the airline industry today, value-of-service pricing or price discrimination increased with the degree of rivalry. The managers of the various telephone companies concluded that in order to maximize their profits, price discrimination should be used to encourage network membership. The archival records clearly show that the promotion of residential service was not a matter of State public policy, but rather was grounded in sound economics. Competition increased the degree of price discrimination, contrary to the prognostications made by Kahn, et. al. This lesson should not be lost in the current debate; as long as local exchange carriers still have monopoly power, they should not be allowed to impose pricing structures that are not sustainable in competitive markets.

The history illustrates a second point. Whenever discussions of raising residential rates arise, some proponents of higher rates claim that the consumer advocates should have only one objective, to ensure that low-income people have access. Granted, society should be concerned that low-income areas have the smallest percentage of households with telephones. Telephone service is a basic link to the outside world and, as such, should be a given. But there is also a sound economic

reason why commissions should prevent high prices for residential customers. Local exchange is basically a monopoly and, therefore, one of the main purposes of regulation is to see that regulated prices emulate competitive market behavior. Setting market-based prices in a monopolistic or oligolistic industry requires some government policy; so clearly this is an issue of regulation, not merely social welfare. The following history illustrates that the advent of rivalry caused Bell to give discounts to residential customers, discounts which increased as the competition heated up. Also, the incumbent finally began to develop rural markets which had been largely ignored until the Independents showed Bell their potential profitability. In short, rivalry spurred Bell to do a better job of developing telephone service. Thus, while low residential rates may benefit low-income communities, the deciding factor for commissions is that relatively low residential exchange rates are the natural outcome of competition.

When Alexander Graham Bell's patents expired in 1893 and 1894, entrants into the industry, known collectively as the Independents, challenged AT&T extensively and intensively. Bell chose to ignore rural markets because it believed that the marginal efficiency of capital was higher in cities.⁶⁹ In the cities, Bell had largely ignored the residential market.⁷⁰

Rivalry, along with some comparatively minor factors, caused the average revenue per station to fall from \$90 in 1894 to \$42 in 1907. Concurrently the number of subscribers increased from 270,381 to 3,839,000.⁷¹ During this competitive period, price discrimination increased. Nationally during the monopoly period, AT&T priced business service at a 20% premium relative to residential customers. During the competitive era, the premium increased to 52%.⁷²

The average revenue per subscriber reflects two simultaneous affects; shifts in the mix of goods purchased and changes in the price of service. This mix can be controlled for by looking at

⁶⁹Wisconsin Telephone News, 1 (December 1906), p. 1.

⁷⁰Claude Fischer, America's Calling.

⁷¹Federal Communications Commission, Investigation of the Telephone Industry in the United States (Washington, 1939), pp. 129, 135.

⁷²Annual Report of the AT&T Company, 1909, pp. 25-28.

the prices in a particular m-1 in a particular market. AT&T had a monopoly in St. Louis from 1876 to 1894. Following the expiration of Alexander Graham Bell's patents in 1894 until 1910, there were two suppliers in the city. Under conditions of rivalry, the industry experienced unprecedented growth. During the first five years of competition, the number of customers almost doubled relative to what had been achieved during Bell's seventeen years of monopoly. Table One illustrates how, in St. Louis, rivalry led to an increase in the premium that business customers paid relative to residential customers. It also multiplied the number of subscribers. During the monopoly era, premium business service cost 20 % more than residential service; by 1904 the differential had increased to 125 %.⁷³

⁷³In 1994, the average rate for unlimited business and residential service was \$44.65 and \$19.80, respectively. Hence, the mark-up in today's monopoly market is slightly less than that which existed in St. Louis, 125 %. Federal Communications Commission, Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service, November 1995, pp. 20, 25.

Table III: St. Louis Development And Rates ⁷⁴

<u>January 1st.</u>	1894	1899	1904	1909	1910
<u>Development</u>					
Bell Stations	3,889	5,121	15,222	41,836	46,312
Independent Stations	----	3,200	11,600	19,400	21,400
Bell Stations per 100	0.8	0.9	2.3	5.6	6.2
populations					
Independent Stations per 100	----	0.6	1.7	2.5	2.8
<u>Populations</u>					
<u>Rates</u>					
<u>Business</u>					
Bell Maximum	\$120	\$150	\$150	\$125	\$72
Independent Maximum		\$60	\$60	\$72	\$72
Bell Minimum	\$100	f\$39	f\$36.50	f\$36.50	f\$36.50
Independent Minimum		\$60	\$60	\$60	\$60
<u>Residence</u>					
Bell Maximum	\$100	\$100	\$60	\$54	\$48
Independent Maximum		\$36	\$48	\$48	\$48
Bell Minimum	\$60	f\$30	f\$18.25	f\$27.38	f\$24
Independent Minimum		\$36	\$36	\$24	\$24
 Bell Average Exchange	 \$96.87	 \$89.21	 \$50.38	 \$39.40	 \$35.50
<u>Revenue</u>					

Note: f = Measured Service

Pricing telephone service in an unregulated market

The data in the above Table clearly demonstrate that under conditions of rivalry, the extent of price discrimination increased. AT&T's pricing philosophy for residential and rural customers was clearly developed during the 1900 AT&T Presidential Conference.⁷⁵ The consensus attitude of

⁷⁴Dubois to Vail, January 21, 1909, AT&T Corporate Archive, Box 1358.

⁷⁵The Conference was attended by the Presidents and other officers of various Bell Operating Companies. "Telephone Service and Charges," January 1900, box 185-02-03, AT&T Corporate Archive.

the officials was that the profitability of a service or an exchange should not be judged by the relationship between the direct cost of providing the product and its price. Instead, the contribution of the enterprise to the firm's profitability should be determined by considering its on the total network. E.J. Hall, the President of Southern Bell, AT&T's Buffalo exchange, and a leading official in its long-distance division, lucidly stated the decision rule which should be used to judge the profitability of an endeavor. "[T]he profit need not necessarily be immediately attached to the particular transaction, but that the company itself profits by what is done." Hall emphasized this view by asking his peers a series of questions:

[D]oes it not come to a question of whether each individual transaction, each thing that we do, should carry a profit with it, or whether the thing that we do it is wise to do if it carries a profit to our general system? That would apply to taking a specially low rate subscriber in an exchange; if it resulted in a larger profit to the exchange; if it resulted in a larger profit to the exchange or... an entire exchange, if that exchange added to the profits of the company, or strengthened the position of the company, it would be good policy to take it even though in itself it did not directly carry a profit with it. I suppose all of us would agree to that proposition?⁷⁶

⁷⁶Ibid., pp. 157-58. Hall made his comments in support of a statement that had just been made by President Cutler of New York Telephone. Cutler had pointed out that due to competitive pressures, New York Telephone opened some rural exchanges for strategic purposes in order to impede the development of a competitive network:

[I]f we did not open an exchange there somebody else would, at about those rates, and that would be likely to become a nucleus for a large competing system resulting in the building out of trunk lines; and we thought it for our interest to open that exchange at rates which we could not demonstrate there would be any profit in; but it would hold the field until this wave of competition passed... So that I would not say that I would not open an exchange even, in some cases, where I could not see any profit in the exchange as a whole, that being, of course, a part of the larger system which covered the surrounding country, which was profitable. I think that you might have to apply the same rule to an exchange as a unit in that case that you would to an individual subscriber in a large exchange. Ibid, pp. 155-56.

Mayo and Kasserman, as well as other economists that proclaim that competitive behavior drives prices to marginal cost, do not seem to consider how strategic pricing in markets with rivalry can lead to quite different types of pricing behavior.

No one disagreed with Hall. Rather, throughout the meeting different participants emphasized the need to think of the benefits of a transaction in terms of its network or system-wide effects. These businessmen had a common understanding of how value was created in a network, the larger the number of participants, the greater the customer's willingness to pay. The leader of AT&T's New York operations, U.N. Bethel, frequently suggested that pricing should be based on value, rather than considerations of cost. Even if it were less expensive to serve business customers, they should be charged a premium price. Bethel explicitly rejected the proposition of basing rates on the cost-of-service. He pointed out that a new rate schedule had recently been adopted in New York City and the price discrimination embedded in the tariff had stimulated network membership:

In fixing a [new schedule] we were not governed by the fact that, to some classes of our subscribers, we could furnish service at a less cost than to others, but we were guided largely by the fact that the class of subscribers, the large users, could pay, and would pay without serious objection, the rates which we proposed to charge them. ...[B]y enlarging the potentiality of each of such subscribers, we increase the value of the service to him; and we have taken that into account...[T]hat whatever success we have had in recent years, in developing our territory, has been due to the fact that we have charged what the traffic will bear.⁷⁷

⁷⁷Ibid., pp. 211-212. One year later, Bethel advocated focusing on system benefits, rather than cost-based pricing in a memorandum to the President of AT&T, Frederick Fish. Bethel said that in determining the profitability of a small exchange, the analysis must take into account the associated externalities:

If the rates in a system embracing several cities and towns of various sizes were based solely on the cost-of-service in each individual locale, the rates in some places would be prohibitive and through having no telephone in such places other places would suffer, possibly to such an extent that the development of them would be seriously interfered with. It is common practice to serve some places at cost and even at below cost, for the general good. There are small towns all through the country where the revenues do not meet the expenses, and the rates have been fixed with the knowledge that they would not yield expenses. This has been done, not because of competition, but for the reason that development in such places has been considered essential to enhance the value of the service in larger places, and to cover the territory. U.N. Bethel to Frederick Fish, Dec. 24, 1901, in "Telephone Rates-Basis-1880-1908," Box 12.

During the period of its patent monopoly, 1876 to 1894, AT&T had failed to recognize that by encouraging membership of marginal customers, and small towns and villages, the economic potential of the network was not being fully exploited. The entrants' approach to building a network was significantly different. The founder of one of the leading Independent journals noted that "the Bell people worked from the top down and the Independents from the bottom up."⁷⁸ The Independents developed their networks by focusing on the residential market and by introducing service to markets that had been ignored by AT&T. For social and commercial purposes, subscribers in these small towns had a need for telephone access to larger towns. Wholesalers, millers, doctors, and other businessmen who worked in these larger cities, realized that their trades would be aided by the establishment of an Independent exchange that could reach markets left undeveloped by AT&T.⁷⁹

In general, the consumer's valuation for access to the network was closely correlated and defined by a hierarchy of demands.⁸⁰ Distinct market segments were organized according to the utility derived from greater access. These distinct segments fell into two broad categories, business and residential customers.⁸¹ Among the former, the demand for service paralleled the organization's internal structure and external market relations. Core business customers were drawn from larger enterprises engaged in long-distance trades, such as hotels, wholesale merchants, department stores, financial intermediaries, transport companies, and national manufacturers. Typically located in the central business district, these firms demanded telephone connections to keep in touch with distant facilities (such as a branch plant or warehouse), as well as customers and suppliers within their trade

⁷⁸Harry MacMeal, The Story of Independent Telephony (Chicago, 1934), p. 24.

⁷⁹Allen/Fish, February 16, 1903; and F.G. Johnson, "Experience of a Pioneer Physician in Northern Wisconsin," Wisconsin Medical Journal, 38 (1939), p. 580.

⁸⁰This and the following two paragraphs are based on David Gabel and David Weiman's paper, "Historical Perspectives on Interconnection between Competing Local Exchange Companies," September 1994.

⁸¹U.S. Bureau of the Census, Telephones: 1907, 74-75, 80; Alan J. Moyer, "Urban Growth and the Development of the Telephone: Some Relationships at the Turn of the Century," in Pool, ed., Social Impact of the Telephone, p. 357-65.

area and beyond. Given the value of the information transmitted, core business clients placed an obvious premium on the clarity and reliability of these connections.

Smaller businesses in more residential areas—grocers, drug stores, and tailors—used the telephone less frequently. Moreover, like their customers, they called within a narrower geographic range. Although the telephone, in conjunction with improved delivery and transport services, enabled many retailers to widen their market scope, they also demanded occasional distant connections to wholesalers in the central business district or a nearby city, in order to place orders and arrange deliveries.

The demands of households and smaller businesses differed only by a matter of degree. Economic elites, such as managers and professionals, often used their home telephones for business-related transactions and so valued more extensive connections.⁸² By contrast, many lower income and working-class households could not afford an individual line, and they either purchased party-line service or frequented public telephones.

At the Presidential Conference, the relationship between the hierarchy of demand and customers' willingness to pay was clearly stated. Sabin, the President of Bell's West Coast operations, mentioned that when residential customers joined the network, businesses' willingness to pay for service increased: "Every new party line subscriber makes it more necessary for some butcher or grocer or other business place to have a higher priced telephone service."⁸³ Sabin added that residential customers were the "foundation" of the business and that their value had to be considered when designing rates: "I think that we all agree that the foundation of the business is the residence. The cream of the business, of course, is the large manufacturer and the large dealer. But if you get in and get the basis, the residence subscribers, you not only get the cream, but you get all the milk that there is in the coconut." Moreover, by increasing residential membership, profits would be earned on the long-distance network that would not be otherwise.⁸⁴ In short, Sabin claimed that

⁸²Ithiel de Sola Pool, "Foresight and Hindsight: The Case of the Telephone," in Pool, ed., The Social Impact of the Telephone, 142; and Fischer, America's Calling, p. 40-42.

⁸³"Telephone Rates-Basis-1880-1908," Box 12, p. 196.

⁸⁴"Telephone Rates-Basis-1880-1908," Box 12, p. 220.

the profitability of residential service should not be judged on a stand-alone basis, rather the network benefits should be measured by considering the service's impact on the demand for business and toll service.

The President of AT&T did not attend the 1900 Presidential Conference. Nevertheless, the Letter Books of Frederick Fish, the Company's President from 1901 to 1907, demonstrate a shared vision. Fish shared Hall's view that the profitability of a transaction should not be measured by considering the direct costs and revenues obtained by serving a particular subscriber. Fish wrote that regardless of whether or not there was competition, some customers might be served "at a rate so low as not to show a profit. These, however, must be compensated for, either by other subscribers in the same place or elsewhere who pay a substantial profit, or by a profitable toll business based upon the fact that we have a large number of subscribers who use the toll lines."⁸⁵

Fish would clearly have found odious the alleged market-based pricing rules put forth by Mayo and Kasserman. These two academics have argued that in competitive markets, prices would be driven to cost and would not reflect the value of service. The Massachusetts Department of Public Utilities has taken Mayo's and Kasserman's position to its logical conclusion; i.e. cost-based-rates lead to customer-class profitability ratios that are equal across a class of customers. Thus, to allow for an earnings differential would entail value-of-service pricing, something that these academics claim is anathema to competitive markets and efficient levels of production. Therefore, the Commission has concluded that the return-on-investment for residential and business customers should be equalized.⁸⁶

When Fish was faced with a proposal to eliminate price discrimination, he summarily dismissed the notion: "Nothing could be more dishonest than charging all business men the same price and charging all residence users the same price, irrespective of the value of the service or the

⁸⁵Fish/Yost, 5 February 1903, Presidential Letter Book, AT&TCA, vol. 26.

⁸⁶Kasserman and Mayo, pp. 127-130; and Massachusetts Department of Public Utilities, *Propriety of the Rates and Charges of New England Telephone*, June 29, 1990, Docket 89-300, pp. 10-12, 16, 21.

amount of service each one requires.”⁸⁷ Fish felt that the reasonableness or fairness of a rate should not be judged by looking at its price/cost ratio. Rather, he believed that the reasonableness of rates should only be judged by considering the overall profitability of the firm. Within this constraint, it made little sense to consider the profitability of a particular service: “The fact is that no one of our rates can be shown to be reasonable or unreasonable apart from the others. The only thing that can be demonstrated, and that in an unsatisfactory fashion, is that, on the whole, one of our companies is making too large, or too little, or just the right amount of money.”⁸⁸ It is highly instructive to contrast Fish’s statement concerning the actual historical pricing behavior of AT&T during an era of competition and no regulation, with the following proclamation by Timothy Tardiff which is remarkable for his lack of understanding of how unregulated telecommunications markets work.

In the United States and other western nations, ubiquitous telephone subscribership has been achieved by artificial restraints on the price of basic residential local exchange service. These low prices have been funded by cross-subsidies from other telephone services, such as toll and interconnection charges imposed on other carriers. With the growth in competition for all services, including local exchange, internal cross-subsidies are not only economically inefficient, they distort competitive outcomes and are ultimately not sustainable.⁸⁹

The so called artificially low price for residential service was selected by AT&T because it maximized network profits, not because of “artificial restraints.”

Using cost data to set telephone rates in an unregulated telephone market

In the prior section, I have summarized how the President of AT&T and its operating companies believed that rates should be set. The implementation of these concepts was left to the

⁸⁷Fish/Wallace, 26 Nov. 1904, Presidential Letter Books, AT&TA, vol. 3.

⁸⁸Fish/Wheeler, Presidential Letter Book, AT&TA, vol. 44, 11 June 1906.

⁸⁹Tardiff, Timothy, J. Vice President, National Economic Research Associates, “Universal Service with Full Competition,” a paper presented at The Telecommunications Universal Service Symposium, Wellington, New Zealand. July 1-3, 1996. Mr. Tardiff works regularly as a consultant for local exchange companies.

firm's managers. The activity of the middle managers was closely monitored by Fish. Fortunately, some of the details of how rates were designed has been retained. The company's comptroller, W.S. Ford developed rate relationships which reflected the concepts described above.

Ford maintained that even if it cost more to provide residential service, business rates should be higher in order to reflect the commercial value of the service:

The money actually expended in furnishing service to residences and other small users, cannot fairly be taken directly as a basis for fixing their rates, as there would then be no recognition, in the rate scheme, of the added value of the telephone to the large users, due to the presence, in the Exchange, of the residence and small users. This added value should properly be a basis for assessing the large users a part of the cost of taking on the residences and small users. Recognition of this principle requires low rates to small users, and produces a high ratio of telephones to population.⁹⁰

Ford developed a rate schedule through a three-step process. First, the line, station, and traffic sensitive expenses were identified. At a minimum, usage rates were designed to recover traffic sensitive rates. He then took the costs of the loop, the line, and the station, and split them between the costs that were directly attributable to customers and were reflected in the fixed monthly charge, and the costs which he associated with external benefit. Since other customers benefited from increased network membership, it would have been economically irrational to assign all of the loop cost to the end-user. In recognition of this externality, the loop cost could be divided evenly between the new customer and other subscribers who might call the new subscriber. Ford added, however, that since there was an option value of connection to the network that was independent of usage, 60 % of the loop cost should be recovered from the end-user and the remaining 40 %, which was an external cost, should be recovered on the basis of those who received the calls.⁹¹

⁹⁰W.S. Ford, "Memorandum: Concerning certain peculiar features of Telephone Exchange Service in recognition of which is suggested the system of rates dated March 21, 1901," September 10, 1901, in "Telephone Rates-Basis-1880-1908," Box 12.

⁹¹Ibid.

Ford used the volume of incoming calls as the metric for the network externality. According to Ford, for every ten calls received by one-party business subscribers, two-party business, one-party residential and two-party residential subscribers received seven, two and one call respectively. These call-receiving values were used to assign the 40 % of loop costs that were to be recovered based on value.⁹²

The data indicate that under Ford's pricing scheme, business customers would pay a premium. His proposal was not well received in all quarters. Bethel wrote to Fish that Ford's proposal gave too much consideration to the cost-of-service. Bethel advocated that additional emphasis should be placed on pricing which was based on "what the traffic will bear," the method followed by the nation's large railroad companies.⁹³ Citing Alexander's "Railway Practice," Bethel noted that value-of-service pricing was rampant throughout the economy:

One of the principal points at issue between theoretical railway reformers and railway managers is, whether freight charges shall be based upon the cost [original emphasis] of the service rendered, or upon its value [original emphasis].

Railroads, in common with authors, doctors, inventors, laborers, lawyers, manufacturers, and most other people who have anything to sell, base their prices upon the value of what they have to offer, rather than upon its cost. Indeed no other basis of railroad services pricing is practicable, as it is by no means the simple matter of calculation it is often assumed to be. The cost of any particular act of transportation cannot even be averaged out, except under the most arbitrary of assumptions.⁹⁴

Unfortunately, AT&T's archives do not indicate the extent to which Ford's proposal was adopted. Regardless, it is clear that value-of-service pricing was a shared belief within this unregulated, competitive telephone company.

⁹²Ibid.

⁹³U.N. Bethel to Frederick Fish, Dec. 24, 1901, in "Telephone Rates-Basis-1880-1908," Box 12.

⁹⁴Ibid. Bethel did not provide the page number for the citation or Alexander's first name.